Application Number **10/799,335**
Amendment dated **16 October 2006**
Reply to Office Action of **22 June 2006**

Remarks/Arguments

Further to the telephone interview conducted on 7 June 2006, and in response to the Office Action mailed on 22 June 2006, Applicants submit the following amendments and remarks. Claim 20 has been cancelled, and no new claims have been added. Therefore, Claims 1–19 and 21–53 remain pending in this application.

Interview Summary.

Applicants thank the Examiner for conducting a telephone interview on 7 June 2006. The following summarizes the substance of the interview, in accordance with the guidelines provided by MPEP 713.04.

(A) No exhibits were shown, and no demonstration was conducted.

(B) Claims 1–53 were discussed.

(C) No specific prior art was discussed.

(D) Applicants did not propose any amendments.

(E) Applicants pointed out that Claims 44–53 had not been examined in the Office Action mailed on 2 June 2006.

(F) No other pertinent matters were discussed.

(G) Examiner agreed to mail a revised Office Action addressing Claims 1–53.

Claim Rejections based on 35 U.S.C. § 102(e).

Claims 1–4, 6, 9–15, 19–28, 31, 32, 34, 39–45 and 51–53 stand rejected as being anticipated by U.S. Patent Application Publication 2003/0157787 ("Murthy"). Claims 1, 19, 39 and 44 are independent.

Murthy discloses various methods for forming germanium films on semiconductor substrates, wherein the germanium films are deposited over a graded silicon-germanium buffer layer. Figure 1 and Paragraphs **[0021]** – **[0025]** describe a method for **blanket** deposition of such a structure. As indicated by operational block 108 of Figure 1, this embodiment involves simultaneously providing both a silicon source gas and a germanium source gas to a deposition chamber. Figure 3 and Paragraphs **[0027]**

– **[0031]** describe a method for **selective** deposition of a graded SiGe—Ge film over exposed regions defined by a SiO_2 mask. As indicated by operational blocks 306 and 308 of Figure 3, this embodiment involves simultaneously providing a silicon source gas, a germanium source gas and an etchant to a deposition chamber.

Claims 1–4, 6 and 9–15. In contrast to the disclosure of Murthy, independent Claim 1 recites a method for blanket depositing a SiGe film, the method comprising, among other things,

> intermixing a silicon source, a germanium source and an **etchant**
>
> [and]
>
> depositing a **blanket** layer of epitaxial SiGe over the substrate....
> [*emphasis added*]

Clearly Murthy cannot anticipate the method of Claim 1. Murthy discloses a first embodiment for blanket deposition, but this first embodiment does not use an etchant. Murthy discloses a second embodiment that uses an etchant, but this second embodiment does not result in blanket deposition. Indeed, Murthy specifically discloses that, in the second embodiment, the etchant "is used to help maintain the selectivity in the deposition of the graded SiGe—Ge film" by etching away SiGe or Ge that forms on the SiO_2 mask, and by suppressing the nucleation of the graded SiGe—Ge over the SiO_2 mask. See Paragraph **[0027]**. Thus, the purpose of including the etchant is to achieve selective deposition.

The Examiner relies on the first embodiment to provide teaching of blanket deposition, and relies on the second embodiment to provide teaching of a precursor mixture that includes a silicon source, a germanium source, and an etchant. However, a claim is anticipated only if each and every element **as set forth in the claim** is found in a single prior art reference. See MPEP 2131. None of the embodiments disclosed in Murthy involves "intermixing a silicon source, a germanium source **and an etchant**" and "depositing a **blanket** layer of epitaxial SiGe" (emphasis added), as is recited in Claim 1. Furthermore, the different embodiments of Murthy from which the Examiner selects features have completely different objectives (that is, selective deposition as compared to blanket deposition). As expounded above, Murthy explicitly teaches that the etchant

is provided in the selective deposition embodiment for the specific purpose of achieving selective deposition. Therefore, not only would an ordinarily skilled artisan have no motivation to combine features of the selective and blanket embodiments, but Murthy actually teaches away from using an etchant in a blanket deposition embodiment by teaching (1) a blanket embodiment without etchant; and (2) a selective embodiment with etchant.

The Examiner states that Murthy discloses a process using an etchant "whereby the layering can occur as a blanket layer of sorts." Applicants traverse this finding insofar as the Examiner is reading the term of art "blanket deposit" upon selective deposition. The skilled artisan understands these terms to be opposites of one another. While the Examiner is entitled to the broadest reasonable interpretation of claim terms during examination, such interpretation cannot be inconsistent with the understanding of the skilled artisan.

> "Although the PTO must give claims their broadest reasonable interpretation, this interpretation must be consistent with the one that those skilled in the art would reach." "Accordingly, the PTO's interpretation of claim terms should not be so broad that it conflicts with the meaning given to identical terms in other patents from analogous art.

In re Cortwright, 165 F.3d 1353, 49 U.S.P.Q.2d 1464, 1467 (Fed. Cir. 1999) In this case, the interpretation of "depositing a blanket layer" or "blanket deposition" to read upon Murthy's **selective** deposition embodiment (the only one employing an etchant) is clearly inconsistent with the skilled artisan's understanding, as demonstrated by Murthy itself.

Based on the foregoing, Applicants respectfully submit that Murthy does not anticipate Claim 1, and respectfully request that the rejection of Claim 1 be withdrawn. Furthermore, because Claims 2–4, 6 and 9–15 depend from Claim 1, Applicants submit that Claims 2–4, 6 and 9–15 are allowable over Murthy for the same reasons that Claim 1 is allowable over Murthy, in addition to reciting further distinguishing features of particular utility. Thus, Applicants respectfully request that the rejections of Claims 2–4, 6 and 9–15 be withdrawn as well.

Claims 19–28, 31, 32 and 34. In contrast to the disclosure of Murthy, independent Claim 19 recites a method comprising, among other things,

> supplying a mass of **silicon precursor** into the chamber;
> supplying a mass of **germanium precursor** into the chamber;
> supplying a mass of **etchant** into the chamber [and]
> depositing a **blanket** SiGe film over the substrate. [*emphasis added*]

Clearly Murthy cannot anticipate the method of Claim 19. As set forth above, Murthy does not teach or suggest use of an etchant for blanket deposition.

Based on the foregoing, Applicants respectfully submit that Murthy does not anticipate Claim 19, and respectfully request that the rejection of Claim 19 be withdrawn. Furthermore, because Claims 21–28, 31, 32 and 34 depend from Claim 19, Applicants submit that Claims 21–28, 31, 32 and 34 are allowable over Murthy for the same reasons that Claim 19 is allowable over Murthy, in addition to reciting further distinguishing features of particular utility. Thus, Applicants respectfully request that the rejections of Claims 21–28, 31, 32 and 34 be withdrawn as well. Claim 20 has been cancelled.

Claims 39–43. In contrast to the disclosure of Murthy, independent Claim 39 recites a method of blanket depositing a SiGe film comprising, among other things,

> intermixing a silicon source gas and a germanium source gas;
> **adding an etchant** to the intermixed source gases [and]
> depositing a **blanket** layer of epitaxial SiGe.... [*emphasis added*]

Clearly Murthy cannot anticipate the method of Claim 39. As set forth above, Murthy does not teach or suggest use of an etchant for blanket deposition.

Based on the foregoing, Applicants respectfully submit that Murthy does not anticipate Claim 39, and respectfully request that the rejection of Claim 39 be withdrawn. Furthermore, because Claims 40–43 depend from Claim 39, Applicants submit that Claims 40–43 are allowable over Murthy for the same reasons that Claim 39 is allowable over Murthy, in addition to reciting further distinguishing features of particular utility. Thus, Applicants respectfully request that the rejections of Claims 40–43 be withdrawn as well.

Claims 44, 45 and 51–53. In contrast to the disclosure of Murthy, independent Claim 44 recites a method of blanket depositing a film comprising, among other things,

> supplying a mass of germanium source gas into the chamber;
>
> supplying a mass of etchant into the chamber
>
> [and]
>
> **blanket** depositing a film over the single crystal substrate [*emphasis added*]

Clearly Murthy cannot anticipate the method of Claim 44. As set forth above, Murthy does not teach or suggest use of an etchant for blanket deposition.

Based on the foregoing, Applicants respectfully submit that Murthy does not anticipate Claim 44, and respectfully request that the rejection of Claim 44 be withdrawn. Furthermore, because Claims 45 and 51–53 depend from Claim 44, Applicants submit that Claims 45 and 51–53 are allowable over Murthy for the same reasons that Claim 44 is allowable over Murthy, in addition to reciting further distinguishing features of particular utility. Thus, Applicants respectfully request that the rejections of Claims 45 and 51–53 be withdrawn as well.

Claim Rejections Under 35 U.S.C. § 103(a) based on Murthy and Mayer.

Claim 5 stands rejected as unpatentable over Murthy in view of Mayer et al., "Electronic Material Science: For Integrated Circuits in Si and GaAs" at page 40 ("Mayer"). Claim 5 depends from independent Claim 1, and further distinguishes the invention of Claim 1 from the cited references. Mayer is cited for teaching the that oxides and nitrides are "equivalents" and does not supply the deficiencies of Murthy discussed above. Therefore, Applicants submit that Claim 5 is allowable over the cited references for at least the same reasons that independent Claim 1 is allowable.

Claim Rejections Under 35 U.S.C. § 103(a) based on Murthy.

Claims 7, 8, 16–18, 29, 30, 33, 35–38 and 46–50 stand rejected as unpatentable over Murthy in view of what the Examiner considers to be Applicants' admitted statements of prior art. Applicants respectfully disagree with the Examiner's

characterization of the cited portion of the specification. Claims 7, 8 and 16–18 depend from independent Claim 1, and further distinguishes the invention of Claim 1 from Murthy. Claims 29, 30, 33, and 35–38 depend from independent Claim 19, and further distinguishes the invention of Claim 19 from Murthy. Claims 46–50 depend from independent Claim 44, and further distinguishes the invention of Claim 44 from Murthy.

Conclusion.

In view of the foregoing amendments, the Applicants submit that this application is in condition for allowance, and respectfully request the same. If, however, some issue remains that the Examiner feels can be addressed by an Examiner's Amendment, the Examiner is cordially invited to call the undersigned for authorization.

Respectfully submitted,

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Dated: 16 oct 06

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